

Using Solar for 24 Hour Heat Access

Review of the Zeolite heat storage pellets. Just add water.

Just Add Water: A revolutionary heat storage product has been around for some time now, but this is one of the first applications for solar cooking and hot water heating use off-grid. The product is called a Zeolite, which is a high surface area substance, which when exposed to water, releases heat. The structure is unique, in that it can be recharged with heat, and retain that latent heat virtually indefinitely if kept dry, until it comes in contact with water.

Instant Heat: The remarkable feature of this substance in pellet or ball form, is that it can boil water almost instantly. So it is perfect for emergency water purification, and cooking.

Heat Recharge: Because the Zeolites need to be heated to be recharged, it is a perfect application for the solar vacuum tube. The recharge temperature is 130 to 250 C.

Charge Now Use Later: The unique qualities of the heat storage (at room temperature), allow you to use the Zeolite at any time of the day, just add water. After cool down of the pellets, dry off and recharge in your solar thermal vacuum tube. The pellets store at ambient temperature.

Zeolite Pellets



The unique latent heat storage capabilities of the Zeolite pellets allow them to release heat by just adding water. They can be recharged with solar vacuum tube heat.

Summary: Zeolites give you the option of 24 hour liquid heating for cooking, water sterilization, or small amounts of hot water for heat. They can be recharged using the heat of the Sun in a solar vacuum tube. The primary advantage of using Zeolites is the ability to have long term latent heat storage, which can be used any time of the day. Zeolites need to be stored in airtight and watertight containers. Zeolites can be recharged with the latent heat using any heat source between 130-250 C.

Solar Vacuum Tube Heating Zeolite



The solar thermal vacuum tube can efficiently heat to recharge Zeolite pellets. Without a reflector it can heat up to 212 F or 100 C. With reflectors up to 400 F or 204 C.

Storage: The best method of storage of pellets is in vacuum sealed bags, or mason jars. For larger amounts, vacuum sealed 5 gallon buckets (either pressure sealed lid or vacuum bag entire bucket). It's imperative to keep water and moisture out of the charged Zeolites. Any water incursion can result in the rapid release of heat around 212 F or 100 C.

Use: A few pellets can heat an entire cup of coffee or tea. This provides a very simple way to deliver heat to your cup of morning beverage. They can also be used for soups, double boilers, and with some ingenuity, they can be used as a low to medium temperature burner heat source. Used with boiling water, you can make steamed vegetables, rice, and pasta.

Commercial Uses: Bosch has been using Zeolite in their PerfectDry dishwashers since 2008, to assist in drying at the end of the washing cycle. They also claim to have a quieter drying operation. Thermador also has entered the dishwasher market with the StarDry drying solution.

